

WHAT IS CLAIMED IS:

1. A current controller for an inductive load, comprising:  
a pulse width modulation signal outputting circuit for outputting a pulse width modulation signal for setting a current caused to flow through the inductive load to a target current;

a saw-tooth-wave signal generating circuit for generating a saw-tooth-wave signal having the same period as that of the pulse width modulation signal;

a command value smoothing circuit for smoothing the pulse width modulation signal to generate a setting signal having the same period as that of the pulse width modulation signal;

a detection value amplifying circuit for generating a detection signal having the same period as that of the pulse width modulation signal on the basis of the current caused to flow through the inductive load;

a deviation integrating circuit for generating a deviation integration signal corresponding to deviation integration of the setting signal and the detection signal; and

a current controlling circuit for controlling the current caused to flow through the inductive load on the basis of the saw-tooth-wave signal and the deviation integration signal.

2. A current controller for an inductive load according to claim 1, wherein the saw-tooth-wave signal generating circuit is operated at a timing of a rise of a pulse of the pulse width modulation

signal.

3. A current controller for an inductive load according to claim 1, wherein the deviation integration signal has a voltage component containing the setting voltage of the setting signal, and the deviation integration voltage of the setting signal and the detection signal.

4. A current controller for an inductive load according to claim 1 wherein the pulse width modulation signal is operated with a period having a value smaller than an inductive time constant as the ratio of an inductance to an internal resistance of the inductive load, and the detection value amplifying circuit has a semiconductor element for suppressing a pulsation component of the current caused to flow through the inductive load.

5. A current controller for an inductive load according to claim 1, wherein the detection value amplifying circuit has a smoothing capacitor which is charged with electricity through a charging resistor when the switch element is turned ON, and the electric charges accumulated in which are discharged through a discharging resistor when a switch element is turned OFF, and wherein

a discharge time constant as a product of a resistance value of the charging resistor and an electrostatic capacity of the smoothing capacitor is set to a value equal to the inductive time constant.

6. A current controller for an inductive load according to

claim 1, wherein the setting signal has the smoothing characteristics equal to those of the detection signal.

7. A current controller for an inductive load according to claim 1, further comprising:

a converter for digital converting a voltage of the detection signal;

memory means for storing therein a monitoring program for monitoring a state of control for the current caused to flow through the inductive load; and

processing means for making a comparison between a target current of the inductive load which is set with the pulse width modulation signal generated by the pulse width modulation signal outputting circuit and a flowing current of the inductive load based on the digital detection signal the converted by the converter in accordance with the monitoring program, and for monitoring a state of control for the current caused to flow through the inductive load on the basis of the comparison results and in accordance with the monitoring program to output monitoring situation to an output unit.

8. A current controller for an inductive load according to claim 7, further comprising overload protecting means for, cutting off conduction of the switch element when an abnormality of the inductive load is detected, and outputting the detection signal in that case to the processing means,

wherein the processing means, on the basis of the detection signal outputted by the overload protecting means, further to the output unit in fact that the abnormality occurred.

9. A current controller for an inductive load according to claim 7, wherein the processing means includes the pulse width modulation signal outputting circuit.